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## EUGEN HUSSAK

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Professor Eugen Hussak died in a little hotel in the city of Caldas in southern Minas Geraes, Brazil, on the fifth of September last. The important part he took in the development of mineralogy and petrography in Brazil, his standing among specialists, and his scientific attainments call for a fuller account of his life and labors than we are able to give at the present.

Francis Eugen Hussak was born at Wilden, Steiermark, Austria, March 10, 1856. His parents were Johann Hussak, a lawyer, and his wife Therese von Wagner. After he came to Brazil he married Herminia Hennies by whom he had two sons. He was educated in the Gymnasium and University of Gratz, studied afterward at the University of Leipzig, where he was a pupil of Ferdinand Zirkel, one of the founders of the modern science of petrography, and later returned to Gratz where he took his Doctor's degree. While working under Zirkel at Leipzig, Hussak began the microscopic study of minerals and rocks, and it was from him that he



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received his greatest inspiration and encouragement. After graduation he went to Vienna where he attended the lectures of Tschermak, and was for three years engaged on the K.K. Geolog. Reichsanstalt. In Vienna he prepared his book *Anleitung zur Bestimmung der gesteinsbildenden Mineralien* which was published at Leipzig in 1885, a book that was translated into English by Professor E. G. Smith, and was published in the United States in

<sup>1</sup> Translated from the Portuguese by J. C. Branner. The original article appeared in the *Jornal do Commercio*, Rio de Janeiro, October 7, 1911.

1893 under the title of *The Determination of Rock-forming Minerals*. He was then called to Germany as assistant to Professor D. Laspeyres and in that capacity worked at Kiel and later at Bonn. He remained in Germany until 1887, publishing in the meantime his *Katechismus der Mineralogie*, a book which has passed through five editions.

In the universities and museums of Germany and Austria Hussak had examined various collections of Brazilian rocks and minerals that had been put aside to await classification. At Vienna he saw the collections made by Helmreichen, in Bonn he saw those made by Krantz, and at Berlin he saw a collection from Rio Grande do Sul. In all these collections he saw much interesting material, and Brazil seemed to him a new land of promise. But Hussak was not a man who cared to work over the ground or materials left by others, and he took no pleasure in finding fault with the work of others. He preferred new fields. Brazil offered such an opening and whether and when he would go there was only a question of opportunity. He chanced to have as one of his pupils at Bonn a young Brazilian named Jordano Machado. A collection of nephelene rocks taken from a railway tunnel on the Mogyana Railway near the city of Caldas had been sent Jordano Machado, and he had chosen the collection for the subject of his thesis. Hussak looked after the preparation and publication of this paper with great care and interest. Every one of the microscopic rock slides was examined by him personally and carefully. The thesis of Jordano Machado was a brilliant success, but the young petrographer eventually gave up his petrographic work in order to raise coffee.

At this point Hussak left his professorship in the university and went to Brazil with his pupil, who extended to him the cordial Brazilian hospitality of his father's coffee plantation. His early experiences in Brazil were rather trying. On the coffee plantation there was really nothing for a mineralogist to do. Besides there he had no outfit for such work; he lacked microscope, slides, laboratory, and all. After some months of this he felt that he must return to Germany; but unfortunately he had not even the means for the voyage.

In the palace of Dom Pedro II, the emperor of Brazil, he found a temporary solution of the problem. Someone told the emperor that a mineralogist whom Rosenbusch spoke of very highly was in the country without occupation. This led to his being engaged to give instruction in mineralogy and petrography to Dom Pedro de Saxe, the emperor's grandson. But the lessons were soon interrupted. The pupil wanted to get on too fast. Dom Pedro de Saxe wanted to begin his studies by the publication of original papers. His Austrian instructor coolly told him that it was too early yet; that one should learn before he began to teach. The young prince was offended; the teacher insisted, and the matter ended with his being shown the door.

Hussak was living at that time at the old Beresford Hotel in Petropolis in front of the imperial residence. He went to his rooms and began preparations for leaving the city that same day. He was a simple man, and in the crises of life he was at times a mere child. He frankly told the keeper of the hotel of his humiliation, and of his financial difficulties. The hotel-keeper was more philosophical about the matter; he consoled the professor, but did not allow him to leave.

The next morning Dr. Stoltz knocked at Hussak's door, bringing an invitation from the magnanimous emperor for him to appear at the palace. Hussak went at once, and if any apologies were lacking from the young prince they were more than made up by his Imperial Majesty himself. So the lessons were continued for a while at least.

Later O. A. Derby engaged Hussak on the geological survey of the state of S. Paulo, and for twenty years he was the leading petrographer of Brazil.

A glance at the bibliography of Eugen Hussak shows a remarkable originality in his work. To be sure, the backward condition of petrographic geology in Brazil contributed largely to this originality. Mineralogy and petrography were sciences but little cultivated among us. Such work had been begun here by Gorceix in the School of Mines at Ouro Preto, but when the Austrian professor came to S. Paulo there was really no one in the country who was acquainted with the details of the technique of modern petro-

graphy. In S. Paulo there came together, by accident it may be said, a geologist, a petrographic mineralogist, and a chemist, each of them a leader in his specialty. These men were Derby, Hussak, and Florence. They were to work together, and each was to place at the disposal of the others the resources of his own science.

It may be said of Hussak that all his works were contributions to science. He described a large number of new minerals, notably, brazilite, lewisite, zirkelite, tripuhyte, derbylite, senaite, florencite, chalmersite, and gorceixite. He also pointed out various mineral substances of economic importance, such as oxide of zirconium at Caldas, platinum in Minas, carbonados and diamonds in S. Paulo, corundum in Brazil and in Uruguay, and likewise cassiterite, monazite, and several others.

On mineral deposits he left two noteworthy contributions. These were his studies of the gold-bearing beds of Passagem, and on the occurrence of palladium and platinum in Brazil. When he made this last investigation, he wrote to Russian geologists who had sent him materials from the Ural region, calling their attention to certain facts that had hitherto escaped their notice. He began the systematic study of the heavy minerals of the diamond-bearing gravels and added much to the work that had been done by Gorceix. On this subject he has left much valuable material unpublished.

Many years ago he began the preparation of a mineralogy of Brazil, and from the large amount of original matter published by him on this subject, from the many unpublished observations that he had put aside for this work, and from the ability he showed in the preparation of a book for instruction, it is evident that such a volume would have embraced all of his work as a mineralogist. Unfortunately this important work is lost with him.

Wherever he was known he has left sincere friends. In Brazil he leaves no successor.